

# CITYGATE ASSOCIATES, LLC

■ FOLSOM (SACRAMENTO), CA

MANAGEMENT CONSULTANTS ■

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## **FIRE DEPARTMENT ORGANIZATIONAL REVIEW**

### **CITY OF SAN JOSÉ, CA**

#### ***VOLUME 1 OF 3 – EXECUTIVE SUMMARY***

*February 11, 2016*

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### **VOLUME 2 of 3 – Technical Report (separately bound)**

### **VOLUME 3 of 3 – Map Atlas (separately bound)**

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## VOLUME 1—EXECUTIVE SUMMARY

The City of San José Fire Department (the Department) retained Citygate Associates, LLC to perform a Fire Department Organizational Review consisting of three themes, which the City labeled as “packages.” These are:

<b>Package One</b>	Evaluation of Delivery of Fire Department Services
<b>Package Two</b>	Evaluation of Technological Improvements as it Relates to Fire Department Response Time Performance
<b>Package Three</b>	Evaluation of Potential Efficiencies in Fire Department Operations

Contained in Package One was the request to evaluate the Fire Department’s “Standards of Coverage” to include risks, performance targets, fire stations locations, staffing, and the deployment of fire apparatus. “Standards of Coverage” (SOC) is a *systems-based* approach to fire department deployment, as published by the Commission on Fire Accreditation International (CFAI). This approach uses local risk assessment to determine the level of protection best fitting a community’s needs. It is the core methodology used by Citygate in the scope of our deployment analysis work, which is spread, to some extent, across all three requested packages.

The SOC process starts with a risk assessment that determines the valuable assets the community wants to protect and the specific goal/outcome that should drive emergency response. Thus, the process works backwards from a goal/outcome statement such as “confine fires in residential properties to near the room(s) of origin.” From this end point of establishing a goal based on the speed of fire progression for different community risks, a deployment analysis calculates the number of firefighters and apparatus spaced across a community that have to arrive in time across a geography to accomplish the community’s goals. This approach works for all emergencies from medical problems to wildfires, technical rescues, and hazardous materials incidents.

Most emergencies continue to escalate after 9-1-1 is notified. The art of fire crew deployment is to deliver the right sized firefighting force on scene at the point the initial arriving force can **stop** the escalation of the emergency and save lives and property not already lost.

Fire department deployment, simply stated, is about the speed and weight of the attack. **Speed** calls for first-due, all-risk intervention units (engines, ladder trucks, and/or specialty units) strategically located across a department. These units are tasked with controlling moderate emergencies without the incident escalating to second alarm or greater size, which unnecessarily depletes department resources as multiple requests for service occur. **Weight** is about multiple-unit response for serious emergencies such as a room and contents structure fire, a multiple-patient incident, a vehicle accident with extrication required, or a heavy rescue incident. In these

situations, enough firefighters must be assembled within a reasonable time frame to safely control the emergency, thereby keeping it from escalating to greater alarms.

The SOC process contains eight elements and some of these were specifically requested in Packages Two and Three. However, an SOC is a systems approach where each element is a building block of analysis upon which the next element builds. Therefore, Package One of Citygate’s report contains all eight elements of the SOC process and can serve as the baseline for policy choices by the City Council.

To address the scope of work elements contained in all three of the respective packages, Citygate’s work is presented across three separately bound volumes. **Volume 1** is this Executive Summary summarizing our findings and recommendations across all three packages.

**Volume 2** consists of four “chapters,” covering the three requested packages in depth:

<b>Package One</b>	In-depth community risk assessment	<b>Chapter One</b>
	Standards of Response Coverage (SOC) assessment that analyzes fire crew deployment	<b>Chapter Two</b>
<b>Package Two</b>	An assessment of technology and dispatch issues	<b>Chapter Three</b>
<b>Package Three</b>	The results of our organizational structure review	<b>Chapter Four</b>

**Volume 3** is the SOC Map Atlas to complement our Chapter Two SOC review. The Map Atlas contains full-page map exhibits for risks, fire station travel time coverage, and needed improvements.

## **1.1 POLICY CHOICES FRAMEWORK**

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First, as the City Council and Executive Management understand, there are no mandatory federal or state regulations directing the level of fire service response times and outcomes delivered by the City. The body of regulations on the fire service provides that *if fire services are provided, they must be done so with the safety of the firefighters and citizens in mind*. Historically, while the City has made significant investments in its fire services, it has been challenged to provide best practice response times Citywide as the City grew outward from the urban core over the last several decades.

## **1.2 CITYGATE’S OVERALL OPINIONS ON THE STATE OF THE CITY’S FIRE SERVICES**

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In brief, *across all three packages* of requested analysis, Citygate finds that the challenge of providing fire services in the City is similar to that found in many large cities ranging from urban to suburban areas over diverse terrain: providing an adequate level of fire services within the

context of limited fiscal resources, competing needs, growing and aging populations, plus economic-driven uncertainty surrounding the exact timing of future development in some areas.

We find the City’s deployment system does not provide City Council-adopted and best practice desired response times, especially outside of the urban core as fire station spacing increases in the suburban areas. Delivering response times to all neighborhoods at the adopted City goal will require additional resources. Traffic congestion is also an increasing problem that further strains the Department’s response time reach at morning and evening commute times. The City’s growing employment base and regional post-recession economic jobs recovery is yielding intense traffic congestion at rush hours. The geographic information system (GIS) travel time analysis in this study and the prior incident travel time data for the Department’s responses clearly show the substantial hindrance this causes to emergency response travel in the City.

The straightforward problem is that the City’s large geography and non-grid road design outside of the older downtown core is simply too large to serve efficiently with a limited number of fire stations. The only way to maintain reasonable emergency unit travel times will be for the City to add more crews (both in the browned out (closed) stations and where a sufficient number of fire stations does not exist), and add at least four to six critically missing fire stations.

Throughout this report, Citygate makes observations, key findings, and, where appropriate, specific action item recommendations. Overall, there are 54 key findings and 48 specific action item recommendations. These are repeated in this Executive Summary in the same order they appear in Volume 2. They are numbered in sequential order by chapter. The chapter is denoted by the first digit (e.g., #1-1, #1-2, etc. for Chapter One; #2-1, #2-2, etc. for Chapter Two and so on).

After all of the findings and recommendations are discussed in this Executive Summary along with summaries of each chapter, a fiscal analysis will address the fiscal questions posed by the City at the end of Package One. This will include the fiscal impacts, phasing, and possible next steps of changes recommended by Citygate.

**Package  
One**

**Evaluation of Delivery of Fire Department  
Services**

**1.3 Package One Summary—Risk Assessment (Chapter One) and Standards of Response Coverage (SOC) Analysis (Chapter Two)**

**1.3.1 (Chapter One) Community Risk Assessment Summary**

The objective of a community risk assessment is to:

- ◆ Identify the hazards with potential to adversely impact the community or jurisdiction
- ◆ Quantify the probability of occurrence for each identified hazard
- ◆ Determine overall risk by hazard.

A *hazard* is broadly defined as a situation or condition that can cause or contribute to harm. Hazard examples include fires, medical emergencies, vehicle collisions, earthquakes, floods, etc. *Probability* is the likelihood of occurrence of a particular hazard, and *impacts* or *consequences* are the adverse effects that a hazard occurrence has on people, property, and/or the community as a whole. *Risk* is broadly defined as the *probability of hazard occurrence* in combination with the *likely severity of resultant impacts*, and *Risk Vulnerability* is a measure of the probability of the existing deployment model’s ability to protect against or mitigate a specific hazard. These terms are further explained in Volume 2.

Citygate’s evaluation of the various risks likely to adversely impact San José yields the following conclusions:

- ◆ San José has a very diverse metropolitan population density with suburban population densities in the outlying areas
- ◆ San José’s population is projected to grow by over 40% over the next 25 years
- ◆ The City has a mix of residential, commercial, office, and industrial buildings typical of a large western metropolitan city
- ◆ San José has a vast transportation network including highways and other primary vehicle transportation routes, railways, mass transportation modes, and airports
- ◆ The City of San José has varying levels of risk relative to nine hazards specifically relating to fire department services as follows:
  - Building Fire Risk



- Wildland Fire Risk
- Emergency Medical Service Risk
- Hazardous Materials Risk
- Technical Rescue Risk
- Transportation Risk
- Earthquake/Seismic Activity Risk
- Landslide/Mudslide Risk
- Flood Risk

Table 1 summarizes San José’s overall risk by hazard and risk zone (battalion) weighting of multiple factors as discussed in depth in Volume 2—Chapter One:

**Table 1—Overall Risk Summary by Hazard and Risk Zone**

Risk	Battalion 1 Council Districts 3, 6, 7, 9, 10	Battalion 2 Council Districts 2, 4, 5, 7, 8	Battalion 10 Council Districts 1, 6, 9	Battalion 13 Council Districts 2, 6, 7, 8, 9, 10	Battalion 29 Council Districts 3, 4, 5
Building Fire	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE
Wildland Fire	LOW	MODERATE	MODERATE	MODERATE	LOW
EMS	HIGH	HIGH	HIGH	HIGH	MODERATE
Hazardous Material	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE
Technical Rescue	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE
Transportation	HIGH	HIGH	HIGH	HIGH	HIGH
Earthquake/Seismic Activity	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE
Landslide/Mudslide	LOW	LOW	LOW	MODERATE	LOW
Flood	MODERATE	MODERATE	LOW	MODERATE	MODERATE

### ***Risk Assessment Findings***

**Finding #1-1:** San José’s building fire risk is ***MODERATE*** across all five battalions. This risk rating reflects a high probability of occurrence; a moderate inventory of high-risk occupancies, high fire flow sites, high-rise buildings, and Critical Infrastructure / Key Resource sites; and very good service capacity.

- Finding #1-2:** San José’s wildland fire risk is **LOW** in Battalions 1 and 29, and **MODERATE** in Battalions 2, 10, and 13. Typical late spring through fall weather patterns, vegetative fuel types and condition, and the topography of the wildland Fire Hazard Severity Zones in and around San José contribute to an increased probability of wildland fires in these areas with potential for erratic fire behavior.
- Finding #1-3:** San José’s EMS risk is **MODERATE** for Battalion 29 and **HIGH** for the other four risk zones. These risk ratings reflects a high probability of occurrence, moderate at-risk populations, high daily vehicle traffic volume, and very good pre-hospital and hospital emergency service capacity.
- Finding #1-4:** San José’s hazardous material risk is **MODERATE** across all five battalions. These risk ratings reflects moderate probability of occurrence, populations at risk, fixed hazardous material sites, and emergency evacuation capability; high daily transported hazardous material volume; and good hazardous material service capacity.
- Finding #1-5:** San José’s technical rescue risk is **MODERATE** across all five battalions. This risk rating reflects a high daily vehicle, aircraft, and railway traffic volume; moderate probability of occurrence, commercial/industrial activity, and water-related rescue risk; and very good technical rescue service capacity.
- Finding #1-6:** San José’s transportation risk is **HIGH** across all five battalions. This risk rating reflects a high probability of occurrence; daily vehicle, aircraft, and railroad traffic volume; moderate daily aircraft and railroad traffic volume; moderate disaster risk; and very good service capacity.
- Finding #1-7:** San José’s earthquake/seismic activity risk is **MODERATE** across all five battalions reflecting multiple known faults in combination with the potential for significant ground shaking; moderate probability of occurrence, vulnerable populations, soft story buildings, and Critical Infrastructure / Key Resource inventory; and very good service capacity.
- Finding #1-8:** San José’s landslide/mudslide risk is **LOW** for Battalions 1, 2, 10, and 29, and **MODERATE** for Battalion 13. These risk ratings reflects high seismic shake potential; moderate probability of occurrence, vulnerable populations, and liquefaction and landslide-prone areas; and very good service capacity.

**Finding #1-9:** San José’s flood risk is **LOW** for Battalion 10 and **MODERATE** for the other four battalions. These risk ratings reflect moderate probability and risk factor values, and very good service capacity.

***Risk Assessment Recommendations***

*There are no specific recommendations as the risk demography was used to drive the analysis of fire crew and apparatus deployment in Chapter Two.*

**1.3.2 (Chapter Two) Standards of Cover Assessment Summary**

In *Chapter Two* of **Volume 2** of this study, Standards of Cover Assessment, Citygate’s analysis of prior response statistics and use of geographic mapping tools reveals that the City *does not* have an adequate number of fire stations to serve its diverse risks across varied topography and population densities. The SOC and risk maps provided in **Volume 3** and the corresponding text explanation in Chapter Two describe the Department’s current performance in detail.

The City’s current adopted fire unit deployment performance goal is for a fire unit *citywide* to arrive within 8 minutes to 80% of the most serious Priority 1 incidents. The time starts at fire dispatch center call receipt and ends with the first crew arriving on scene.

For effective outcomes on serious medical emergencies and to keep serious, but still emerging, fires small, both published national best practices and Citygate recommend that the first-due fire unit should arrive within *7 minutes* of fire dispatch receiving the 9-1-1 call, *90%* of the time.

Citygate and the Commission on Fire Accreditation International (CFAI) recommend that fire unit response time measures be adopted and monitored specific to each neighborhood or fire station area. This is to provide *equity of access* to the fire response system for similar population densities and areas with similar risks, since the level of taxes to fund fire protection is typically similar within a neighborhood or fire station area. A single citywide measure cannot tell the entire customer service delivery story when high and low performing station areas are averaged into an 80 or 90% aggregate measure. The issue is mathematical: where a few densely-spaced stations (in the downtown core areas) handle very high incident volumes, their response times mask slower performance in areas with wider fire station spacing and fewer incidents per station. Thus, in the tables to follow, Citygate reports on *three area* measures for **both** the Citygate recommended performance and the current City aggregate goal:

1. Department-Wide
2. Battalion
3. Station Area

## City of San José—Fire Department Organizational Review

### Volume 1—Executive Summary

In San José, the current fire station system provides the following unit coverage across a variety of population density/risk areas for emergency medical and fire incident types. The table below compares the Citygate/CFAI 90% and the San José 80% performance side by side. As can be seen below, no area measure at 90% meets a best practice goal of 7:00 minutes/seconds from fire dispatch receipt to first unit on scene. At the lesser current City measure of 80% at 8 minutes, only five individual station areas just beat the 8-minute goal (highlighted below in yellow) and the department-wide performance is 30 seconds too long.

**Table 2—Call to Arrival Time Analysis (14/15)**

Battalion/Station	Minutes (Incidents) at <u>90%</u> Performance	Minutes (Incidents) at <u>80%</u> Performance
<b>Department-Wide</b>	<b>09:45 (55,586)</b>	<b>08:30 (55,586)</b>
<b>Battalion 01</b>	09:30 (14,372)	08:13 (14,372)
Station 01	08:41 (2,343)	07:26 (2,343)
Station 03	09:24 (2,821)	08:10 (2,821)
Station 07	09:02 (1,222)	07:56 (1,222)
Station 08	08:47 (2,809)	07:29 (2,809)
Station 26	10:21 (3,380)	09:01 (3,380)
Station 30	09:30 (1,608)	08:25 (1,608)
Station 33	10:30 (189)	09:18 (189)
<b>Battalion 02</b>	09:42 (12,768)	08:30 (12,768)
Station 02	09:53 (3,333)	08:41 (3,333)
Station 11	10:19 (1,040)	08:52 (1,040)
Station 16	09:41 (2,643)	08:26 (2,643)
Station 19	08:58 (1,352)	07:55 (1,352)
Station 21	09:35 (1,610)	08:38 (1,610)
Station 24	09:51 (1,537)	08:36 (1,537)
Station 31	09:08 (1,253)	08:10 (1,253)
<b>Battalion 10</b>	09:35 (10,952)	08:25 (10,952)
Station 04	08:59 (2,742)	07:57 (2,742)
Station 06	09:16 (1,692)	08:08 (1,692)
Station 09	09:45 (1,871)	08:30 (1,871)
Station 10	09:55 (1,932)	08:46 (1,932)
Station 14	10:08 (1,946)	08:51 (1,946)
Station 15	09:15 (769)	08:24 (769)
<b>Battalion 13</b>	09:45 (10,886)	08:35 (10,886)

# City of San José—Fire Department Organizational Review

## Volume 1—Executive Summary

Battalion/Station	Minutes (Incidents) at <u>90%</u> Performance	Minutes (Incidents) at <u>80%</u> Performance
Station 12	09:21 (1,566)	08:14 (1,566)
Station 13	09:30 (1,716)	08:19 (1,716)
Station 17	09:35 (1,395)	08:30 (1,395)
Station 18	10:01 (2,351)	08:44 (2,351)
Station 22	09:11 (742)	08:14 (742)
Station 27	09:39 (989)	08:09 (989)
Station 28	10:06 (218)	08:42 (218)
Station 35	10:08 (1,909)	09:00 (1,909)
<b>Battalion 29</b>	<b>10:15 (6,086)</b>	<b>08:58 (6,086)</b>
Station 05	10:32 (1,876)	09:02 (1,876)
Station 20	10:06 (294)	09:14 (294)
Station 23	09:58 (1,151)	08:47 (1,151)
Station 25	09:55 (222)	08:37 (222)
Station 29	10:39 (711)	09:20 (711)
Station 34	09:56 (1,832)	08:54 (1,832)

The City’s General Plan Safety Element has adopted a 4-minute travel time goal from fire stations for planning the expansion of services. As the next table shows, **no fire station area currently can meet this goal either:**

**Table 3—Travel Time Analysis (Baseline Performance in 2014/15)**

Battalion/Station	Minutes (Incidents) at <u>90%</u> Performance	Minutes (Incidents) at <u>80%</u> Performance
<b>Department-Wide</b>	<b>06:34 (55,397)</b>	05:52 (54,501)
<b>Battalion 01</b>	<b>06:16 (14,779)</b>	<b>05:34 (14,018)</b>
Station 01	05:19 (2,399)	04:46 (2,263)
Station 03	06:15 (2,964)	05:33 (2,761)
Station 07	05:54 (1,233)	05:25 (1,193)
Station 08	05:54 (2,866)	05:07 (2,744)
Station 26	07:01 (3,431)	06:19 (3,313)
Station 30	06:01 (1,671)	05:28 (1,558)
Station 33	07:23 (215)	06:36 (186)

# City of San José—Fire Department Organizational Review

## Volume 1—Executive Summary

Battalion/Station	Minutes (Incidents) at 90% Performance	Minutes (Incidents) at 80% Performance
<b>Battalion 02</b>	06:32 (12,282)	05:50 (12,504)
Station 02	06:34 (3,327)	05:52 (3,280)
Station 11	07:16 (912)	06:11 (1,021)
Station 16	06:29 (2,633)	05:48 (2,574)
Station 19	05:56 (1,276)	05:13 (1,318)
Station 21	06:41 (1,487)	06:08 (1,578)
Station 24	06:37 (1,492)	05:52 (1,504)
Station 31	06:05 (1,155)	05:39 (1,229)
<b>Battalion 10</b>	06:29 (10,833)	05:55 (10,788)
Station 04	05:58 (2,770)	05:31 (2,707)
Station 06	06:28 (1,637)	05:47 (1,661)
Station 09	06:27 (1,821)	06:00 (1,840)
Station 10	06:39 (1,970)	06:08 (1,905)
Station 14	07:06 (1,936)	06:18 (1,917)
Station 15	06:16 (699)	05:57 (758)
<b>Battalion 13</b>	06:34 (10,561)	05:55 (10,708)
Station 12	06:17 (1,536)	05:31 (1,540)
Station 13	06:18 (1,648)	05:36 (1,687)
Station 17	06:40 (1,303)	06:03 (1,371)
Station 18	06:29 (2,258)	05:58 (2,311)
Station 22	06:10 (713)	05:42 (731)
Station 27	06:41 (1,019)	05:31 (967)
Station 28	07:39 (206)	06:16 (213)
Station 35	06:49 (1,878)	06:19 (1,888)
<b>Battalion 29</b>	07:04 (6,336)	06:11 (5,983)
Station 05	07:26 (2,018)	06:23 (1,850)
Station 20	07:27 (279)	06:31 (282)
Station 23	06:58 (1,120)	05:54 (1,132)
Station 25	07:05 (231)	05:38 (214)
Station 29	07:23 (909)	06:43 (699)
Station 34	06:30 (1,779)	06:03 (1,806)

As **Volume 2—Chapter Two** of this report will detail, the dispatch and crew turnout times can use slight improvement. However, the travel times are longer than an urban best practices recommendation of 4 minutes, reflective of the large size of some station areas, road network design, and traffic congestion issues. Short of adding additional fire stations and companies to existing station areas for simultaneous incident coverage at peak hours of the day, given the City’s road network and traffic congestion, there is no way to appreciably lower emergency fire unit *travel* times without adding units or reducing incident demand from low acuity emergency medical services (EMS) incidents (patients without time-sensitive clinical emergencies) to increase existing unit availability to serious incidents. Changes to the EMS workload will be addressed in the overall SOC evaluation sub-section to follow.

The City’s geography is just too large and no enhanced technology, dispatch process, traffic signal preemption device, or other non-response unit approaches can markedly lower response times as the gaps in the system are large and numerous. The resulting *total* response times above are worse than a Citygate recommended and national best practices goal of 7 minutes from fire dispatch receiving the 9-1-1 call.

### ***EMS System Challenges***

The fire service paramedic systems from 1970 up to about the year 2000 were designed for *serious* patient care incident volumes. Over the last 15 years, EMS incidents volumes across the nation have exploded with *non-emergent* 9-1-1 EMS requests as non- or under-insured populations in America came to use EMS and emergency rooms as their primary pathway to health care.

Today, both 9-1-1 systems and emergency rooms are flooded with non-emergent patients. Health care providers have tried to offer alternatives, but with only limited success. Mental health situations requiring a police 72-hour psychiatric evaluation hold (under California law called a 5150 hold) have increased and not all facilities are capable of caring for these patients.

California has another rising challenge, that of “wall times” in emergency rooms, where non-emergent ambulance patients are not given immediate emergency room care and a bed. The emergency rooms are too full and even care beds in the rest of the hospital can be in short supply. So the ambulance crews must keep patients under their care, on their gurney, next to a hallway wall waiting for admittance (a.k.a. “wall time”). Wall times have risen to commonly more than 60 minutes, and waits of several hours are not unheard of. So the ambulances (and fire paramedics if also along) are held and not able to offer service to others. This delays ambulance response times *and* increases fire crew on-scene times as they wait for ambulances from farther away. In San José, where a shortage of fire units already exists, this increased scene time further reduces the availability of units and causes other fire units to travel from afar to cover incidents. This occurrence is supported in the travel times analysis section of this study (see Volume 2—Chapter Two, Section 6.3).



Federal health care reform, by extending insurance coverage and offering other treatment pathways, may eventually help this problem of emergency room overcrowding. Although to date, the problem continues to grow and even major health system providers are stymied and perplexed by the complexity of the issue. There is no easy answer; otherwise, the issue would have been fixed three to five years ago.

The best practice advice today suggests that fire departments should work closely with their EMS agencies to design multi-tier systems of different capabilities and required response times. Methods being tried elsewhere in California and out of state include the use of low acuity units and/or an EMT unit instead of a paramedic unit. Some fire departments are also trying to stop responding altogether to low acuity incidents, and instead the patient has to wait for a unit deployed Code 2 (no red lights or siren) from the regional ambulance system.

Any such combination of methods for differently handling low acuity patients to maintain response capacity for the emergent patients has to be done in cooperation with the counties as California state law tasks them with the design, provision, and medical oversight of ambulance systems. The County and City should work together to triage the San José Fire Department's resources to the more acute patients.

There are new reimbursement pathways opening for EMS care and public/private partnerships in the provision of ambulance and first responder EMS care that may significantly improve the revenues of weak systems. Even if San José could afford to add more fire response resources immediately, using new revenues, this alone may not be a long-term solution.

The fire service has to have “stand by” capacity for all types of emergencies, and to do so at a cost the community can afford, it cannot continue to respond to non-urgent EMS incidents in ever-increasing quantities. The public agencies, hospitals, and insurance providers have to cooperate to design and try new adaptive ideas, measure the pilot test results, and continuously improve to obtain an integrated solution to these complicated issues, just as any successful Silicon Valley company would.

**Strategic Policy Approach Need:** The incident volumes and response time issues identified in Volume 2—Chapter Two should be used for foundational material for an ambulance system re-design effort. Given that multiple fire departments already work closely together in the County and that hospitals serve regions and not just one city, *it only makes sense for as many cities as possible to participate with the County in a regional solution* to provide and jointly fund **both** first responder paramedic and ambulance transportation. The problem is so large and acute that fragmented solutions are likely insufficient or short term.

### ***Challenges with the Number of Firefighters Per Crew***

Given the cost of fire department staffing, a natural question is, “how many firefighters are needed per unit?” Citygate has considered the 3- versus 4-firefighter-per-unit issue given our in-



depth understanding of San José’s risks and deployment system. In Volume 2—Chapter Two, Sections 4.2, 4.5.2, and 5.1 of this report, considerable attention was given to the risks present in San José, the staffing needed over time to control emergencies in the identified risks, the staffing per unit, available travel times, the applicable Occupational Safety and Health Administration (OSHA) safety standards, and a Federal National Institute of Standards and Technology (NIST) study listed as footnote #11 in Volume 2—Chapter Two, Section 5.1.

There is no question from Citygate’s perspective, or the perspective of San José Fire Department leadership over many decades, that a 4-firefighter unit is more effective and safer for the firefighter and the public being protected in San José. Other agencies have lighter risk and workloads on some or all of their units and thus choose to not fund 4 firefighters per unit and staff with 3 firefighters. This is typical in many agencies from suburban communities to the Los Angeles County Fire Department which serves many suburban cities.

In the largest urban areas of the United States, where population densities are the greatest, with taller buildings and/or older, more fire-prone structures, *all of* the departments San José’s size or larger staff with a minimum of 4 firefighters per engine and ladder apparatus. Population counts aside, in California and the Bay Area, this also includes:

- ◆ City of Oakland
- ◆ City/County of San Francisco
- ◆ City of Sacramento
- ◆ City of San Diego

Nationally, the staffing per firefighting unit for the largest cities (by population) is shown below:

**Table 4—Fire Unit Staffing for the Ten Largest Cities in the U.S.**

Rank by Size	City	Population	Fire Unit Staffing
1	New York	8,175,133	5
2	Los Angeles	3,792,621	4
3	Chicago	2,695,598	5
4	Houston	2,099,451	4
5	Philadelphia	1,526,006	4/5
6	Phoenix	1,445,632	4
7	San Antonio	1,327,407	4
8	San Diego	1,307,402	4
9	Dallas	1,197,816	4
10	San José	1,016,479	4

Citygate used the SOC analysis tools in this study to answer this question, “Given the deployment gaps in the City of San José, how many engines, if any, could have staffing reduced from 4 to 3?”

The reality is that very few engines can have staffing reduced without multiple changes first occurring to risks and EMS incident demands. With nine fire station gaps in the system, and four to six of those being large, in many areas the second-due fire unit is not close-by, or is overworked with incidents, so the first-due 3-firefighter crew cannot start interior fire attack if the OSHA “2-in/2-out” rule is to be followed.<sup>1</sup>

In addition to the station gaps and high incident demand areas, we also had to take into account areas of significant traffic congestion and the impacts of units being out of position due to required multi-unit training, both of which create delays for a second- or third-due unit to be available.

Citygate’s analysis finds **none** of the current engines have significant overlap from adjoining units having modest workloads. The downtown or core units are theoretically slightly overlapped at 4 minutes travel time, but all have very high incident demands. Other units that are overlapped at 4 minutes by another unit are next to one or more major gap areas. The non-downtown units (units outside of the core) are spread out and many are close to gap areas. Other units are at the south ends of the City, where mutual aid support from other departments is not close by south of the City limits or across the foothills on both sides of the Coyote Valley region.

The response statistics analysis in this study found that none of the current station areas meet the City’s adopted fire unit travel time goal of 4 minutes and struggle to get under even 6 minutes travel. Citygate found at peak hours of the day, due to the station gaps, simultaneous incident requests, and units assigned to necessary multi-unit training, many incidents had long travel times by a unit just a few blocks from *their own fire station*. This means that units are frequently out of place covering demand in a wide area and at times have to travel back to incidents less than 2 minutes from their station.

Another factor in controlling fire risk, lessening the need for a 4-firefighter crew, is the age of buildings and whether commercial or residential fire sprinklers are used *in large contiguous areas*. Given the age of many San José commercial and residential districts, plus that fact that residential fire sprinklers were only made mandatory recently in California’s building code, there are not yet large station or battalion areas predominantly covered by fire sprinklers. Thus the

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<sup>1</sup> The Occupational Safety and Health Administration (OSHA) 2-in/2-out safety policy requires that firefighters enter serious building fires in teams of two, while two more firefighters are outside and immediately ready to rescue them should trouble arise.

structure fires that do occur are typically more serious, requiring more personnel quickly to control.

Another factor influencing staffing is that on about 15% of the EMS calls, due to patient severity, the fire paramedic goes with the ambulance to the hospital. If this were to happen with a 3-firefighter crew, then the remaining 2 firefighters on an engine would not be a capable team for building or wildland fires until the paramedic could be retrieved from the hospital.

Last but not least, there is not a quick or even affordable technology solution to reducing time over distance *across the geography* for fire units. A lowering of dispatch processing by even 1 minute, only reduces travel time in some areas to 5 minutes, or 8 minutes from 9-1-1 call receipt. The Department is already trying faster dispatching procedures to save some dispatch process time, but such methods cannot save more than a minute from dispatch processing.

In future years, when San José has improved fire unit coverage and substantially more areas with building fire sprinklers it could consider reducing staffing to three per crew on about 9 units, or 33% of the current quantity of engines in service. Even then, the 9 firefighters redeployed would only create three additional 3-firefighter units, which is not enough to close even the four to six major service gap areas identified in this study.

Given the building and wildland fire risks in San José, first arriving unit effectiveness, the safety advantages of 4-firefighter units, and the number of deployment gaps in the system, Citygate cannot recommend the City lower staffing from four to three per unit at this time.

### ***Traffic Signal Preemption***

There is an opportunity to reduce travel time performance through traffic signal fire unit preemption. The year 2000 Fire Strategic Plan advised the City to install fire unit traffic signal preemption on all new traffic signals and to retrofit signals on primary response routes for fire units over time. This recommendation was not close to fully implemented and today there are still approximately 600 signals without preemption, which slows responses and increases the risk of traffic accidents at intersections by fire units trying to slowly request access through a red light by using lights and sirens. The existing 332 intersections need verification that the preemption still works, or where needed, upgrades applied. All 33 fire stations need to have the latest preemption systems installed that allow a short series of traffic lights to be controlled at once in the units' direction of primary travel from the station out to a neighborhood.

### ***Use of 2-Firefighter Squads***

The use of peak activity units (parts of a 24-hour day) has proven beneficial in communities with predictable workload demands by hour of the day and day of the week. However, they are not firefighting units that can handle building and wildland fires. In San José, during the timeframe of this study, the City had four closed companies and five 2-firefighter squads to assist in low priority medical calls in high incident volume areas. One of the four closed companies is

currently open and a second is recommended to be restored as a result of the 2014 SAFER Grant award.

In addition to the two closed companies, considering six station area gaps, and when multi-unit training occurs, a minimum of three companies will be out of service. Further, there may be additional units out of service due to required vehicle and equipment maintenance, company specific training, etc.

Thus, before even one incident occurs, the citywide system could be **short upwards of 11** companies. While the current 2-firefighter squads help with responding to medical emergencies, they cannot be deployed to large deployment gaps where no fire engine exists. The squads do not have the tools for firefighting (hose, water, and staffing). Also, if the squads were shifted to low acuity EMS incidents, the cost of that two-firefighter crew is more expensive than a private ambulance.

Citygate has recommended squads in other cities, but the gaps were smaller, and the workload demands moved, so the squads could shift from core to suburban areas outside of the work week hours. However, San José is missing *too many firefighting units before it even addresses the escalating EMS incident workload*. Too many areas at peak incident demand hours of the day lack a timely response to potential *fire* problems that need hoses and water.

After the City can afford to restore and increase daily staffing (minimum staffing overtime and two closed companies), Citygate then recommends adding fire companies, but initially deploying them flexibly at peak demand hours to cover gaps created by incident demands and planned training. It takes years to plan, acquire land, and construct a fire station. In the meantime, the current squad staffing should be redeployed and additional funding from the 2014 SAFER Grant should be utilized to restore a 4-person company.

### ***Overall Deployment Evaluation***

The Department serves a diverse land use pattern in a geographically challenging area in Santa Clara County. There is intense urbanization bisected by multiple busy highways along with commuter and commercial rail lines, all of which have limited over and under crossings. Not all of the neighborhoods served by the Department have streets laid out in a grid pattern with multiple connection points allowing quicker emergency response. Additionally, there are open spaces, creeks, and hills that either bisect the communities served or create boundaries and challenges for expanding automatic or mutual aid with other bordering fire agencies.

Population drives service demand and development brings population, which increases traffic congestion. Traffic congestion now has measurable, negative effects on fire unit travel times during rush hours.

While the City and now the state-mandated Fire Code requires fire sprinklers in dwellings, it will be many more decades before enough buildings are added, replaced, or remodeled using automatic fire sprinklers. For the foreseeable future, the City will need both first-due firefighting unit and Effective Response Force (First Alarm) coverage in all parts of the City, consistent with current best practices for differing population densities and risks to be protected.

The Department is not meeting its adopted 80% at 8-minute goal, or a 90% at 7-minute best practice goal, or the City General Plan goal of a 4-minute travel time. This study has identified four principal reasons for this situation: (1) too few stations; (2) traffic congestion; (3) high workload rates on many key companies; and (4) movements for mandatory multi-unit training.

### ***The Response Time Problem in an Historical Perspective***

This situation did not develop overnight and an historical perspective is important. The City commissioned a detailed fire department analysis 15 years ago in 2000. That study brought fire deployment issues into focus, and resulted in the passage of a bond issue for replacement and additional facilities.

The year 2000 study identified that over decades as San José grew outward from the historic core areas, the spacing of fire stations became increasingly larger and larger due to a variety of economic factors spanning many city councils.

In that study, the conclusion was that the City needed to adopt response time goals, which is where the 80% at 8 minutes goal was established. Why 80% and not 90%? Because the City at that time was barely meeting an 80% goal and it was felt that more stations were needed before a 90% goal could become realistic. The year 2000 study thus recommended the City add 7-9 additional fire stations.

This study has identified up to nine fire station gaps, of which four to five should be considered high priority candidates, in addition to *restoring the browned-out fire companies*. The table below compares call to first unit arrival times at the historic 80% goal for priority fire and EMS incidents:

**Table 5—Total Response Time at 80% – Fire/EMS “Priority 1” Incidents**  
**(Minutes/Seconds)**

Year	Citywide	Downtown	Other
98/99	7:14	6:42	7:21
14/15	8:30	8:03	8:36
Change	(1:16)	(1:21)	(1:15)
Percent	-18%	-20%	-17%

Since the year 2002, the City used Measure O (2002) bond funds to address key fire infrastructure needs which included replacing and relocating old and inadequate stations with the intent to provide better coverage and response times; additionally, two fire stations were added to the City's system. Despite these efforts, as can be seen above, response time performance has declined over the 15-year period for the same City response time goal point.

During this time, the City grew in population from 894,943 to (as of January 1, 2014) 1,016,499, which is an increase of over 13%. Total Fire Department responses in this period grew from 41,728 to 77,097, which is an increase of almost 85%, or an average 5% per year. Population does drive calls for service, but the increase in emergency medical incident demand has far outpaced population growth in most urban areas.

### ***SOC Findings***

**Finding #2-1:** The City has not adopted in one document a commonly worded and complete best practices-based deployment measure or set of specialty response measures for all-risk emergency responses that includes all the response time segments of dispatch, crew turnout, and travel time, nor a goal statement tied to risks and outcome expectations. The deployment measure should have a second measurement statement to define multiple-unit response coverage for serious emergencies. Making these deployment goal changes will meet the best practice recommendations of the Commission on Fire Accreditation International.

**Finding #2-2:** The Department has a standard response dispatching plan that considers the risk of different types of emergencies and pre-plans the response. Each type of call for service receives the combination of engine companies, truck companies, specialty units, and command officers customarily needed to handle each type of incident based on experience.

**Finding #2-3:** Minimum apparatus staffing per unit on engine companies at four is a recognized best practice for the City's size and risks. This staffing is also consistent with the new Fire Department Strategic Plan goal of providing adequate resources to serious emergencies.

**Finding #2-4:** Using the current 34 fire station locations, not including automatic aid stations, only the downtown, most-developed population density areas are within 4 minutes travel time of a fire station. Traffic congestion has a marked negative impact on unit travel times in at least 21 existing fire station service areas.

**Finding #2-5:** The City's most built-up areas are within 8 minutes travel time of an Effective Response Force assignment of three engines, two ladder trucks, and one Battalion Chief.

- Finding #2-6:** Wildfire apparatus coverage is not provided at Fire Station 11 and should be, given the station’s proximity to wildland hazard areas.
- Finding #2-7:** At least four to six of the nine gaps identified beyond the adopted 4-minute travel time coverage should strongly be considered for permanent fire stations as soon as economics permit.
- Finding #2-8:** A four- to six-unit increase would also add resource depth to the agency at peak hours of the day and for when other units are assigned out of their district for training.
- Finding #2-9:** The highest volume hours for incidents span from 8 am through 8 pm, and even longer on Friday and Saturday. Given this, any use of peak hour units (squads) must be for 12 hours per day for at least 6 days per week.
- Finding #2-10:** National best practices recommend call processing to be close to 60 seconds. Given that medical priority dispatching is being used by San José, the call sorting processing is taking longer. The Department is also trying an “early dispatch” process to speed up crew notification to the most serious emergencies.
- Finding #2-11:** National best practices recommend turnout time to be 80 seconds for fires and 60 seconds for EMS incidents. Citygate finds across a large set of clients that given station design and the legal requirement to don protective clothing before responding, a realistic goal is for turnout time to be 2 minutes to 90% of the emergent incidents. San José is just over a 2-minute goal and with continued focus can reduce its turnout time to 2 minutes.
- Finding #2-12:** The Department in the 2014/15 measurement period had a 90% travel time of 6:34 minutes/seconds. This travel time is about 2.5 minutes above the adopted 4-minute travel time goal in the City’s General Plan, as well as national best practice publications for metro/urban areas. None of the battalions or station areas in San José met this goal.
- Finding #2-13:** As measured from fire dispatch receipt to the first unit arrival, none of the City’s fire station areas came close to a desirable 7:00 minute/second performance to 90% of the fire and EMS emergencies, and only five station areas are under an 8-minute, 80% Department goal. Longer dispatch and especially travel times due to large station areas, absent stations, and traffic congestion cause this result.



**Finding #2-14:** The Department in the 2014/15 measurement period had a 90% First Alarm travel time of 12:50 minutes/seconds. This travel time is almost 5 minutes above the 8-minute national best practice publications for metro/urban areas. None of the battalions or station areas in San José met this goal. Given the fire station 4-minute gaps identified, traffic congestion, and EMS incident demand during peak hours of the day, this result is not surprising and cannot be improved without more units and/or lower incident volumes on the busiest units.

**Finding #2-15:** The City has approximately 600 traffic signals without fire unit preemption capability. Another 332 intersections with preemption need verification that they work, or need upgrades. Not having preemption slows response time and increases the risk of traffic accidents at intersections.

### *SOC Recommendations*

**Recommendation #2-1:** **Adopt Updated Best Practice City Council Deployment Measures Policy:** The City’s elected officials should adopt updated, complete performance measures to direct fire crew planning and to monitor the operation of the Department. The measures of time should be designed to deliver outcomes that will save patients medically salvageable upon arrival; and to keep small, but serious fires from becoming greater alarm fires. With this in mind, Citygate recommends the following measures:

**2-1.1** **Distribution of Fire Stations:** To treat medical patients and control small fires, the first-due unit should arrive within 7 minutes, 90% of the time from the receipt of the 9-1-1 call in the regional fire dispatch center. This equates to a 1-minute dispatch time, a 2-minute company turnout time, and a 4-minute drive time in the most populated areas.

**2-1.2** **Multiple-Unit Effective Response Force for Serious Emergencies:** To confine fires near the room of origin, to stop wildland fires to under three acres when noticed promptly, and to treat up to five medical patients at once, a multiple-unit response from the regional response system of a minimum of three engines, two ladder trucks, and one Battalion Chief totaling 21 personnel should arrive within 11 minutes from the time of 9-1-1 call receipt in fire dispatch, 90% of the time. This equates to 1-minute dispatch time, 2 minutes company turnout time, and 8



minutes drive time spacing for multiple units in the most populated areas.

**2-1.3** Hazardous Materials Response: Provide hazardous materials response designed to protect the community from the hazards associated with uncontrolled release of hazardous and toxic materials. The fundamental mission of the Fire Department response is to minimize or halt the release of a hazardous substance so it has minimal impact on the community. It can achieve this with a travel time in urban to suburban areas for the first company capable of investigating a HazMat release at the operations level within 4 minutes travel time or less than 90% of the time. After size-up and scene evaluation is completed, a determination will be made whether to request additional resources from the Department's hazardous materials team.

**2-1.4** Technical Rescue: Respond to technical rescue emergencies as efficiently and effectively as possible with enough trained personnel to facilitate a successful rescue. Achieve a travel time for the first company in urban to suburban areas for size-up of the rescue within 4 minutes travel time or less 90% of the time. Assemble additional resources for technical rescue capable of initiating a rescue within a total response time of 11 minutes, 90% of the time. Safely complete rescue/extrication to ensure delivery of patient to a definitive care facility.

**2-1.5** Emergency Medical Services: The City should continue to provide first responder paramedic services to all neighborhoods within its current response time ability.

**Recommendation #2-2:** Restore, as soon as possible, the browned-out (closed) fire companies and fully fund the current five squads as stopgap reliever units in the busiest areas.

**Recommendation #2-3:** Identify the funding and timing to add four to six of the most critically missing fire stations.

**Recommendation #2-4:** If adding more fire companies in the gap areas will take longer than two years, then add four full fire companies on a daytime schedule,

7 days per week to add peak hour firefighting/all-risk capability and to backfill for companies on incidents or assigned to training. Continue this program until at least four additional fire stations are operational.

**Recommendation #2-5:** The City should add a cross-staffed wildland fire unit to Fire Station 11, which would improve wildfire unit coverage.

**Recommendation #2-6:** As the Department purchases additional wildland fire apparatus, they should be of the heavier Type III category, which is more suitable for severe and extended-operation wildland firefighting.

**Recommendation #2-7:** The City needs to verify that traffic signal fire unit preemption works for the existing 332 intersections with this capability and apply upgrades where needed. All 33 fire stations need to have the latest preemption systems installed that allow a short series of traffic lights to be controlled at once in the units' direction of primary travel from the station out to a neighborhood.

**Recommendation #2-8:** The Department should work closely with the EMS Agency and stakeholders to design multi-tier systems of different capabilities and required response times to stop sending emergency units to low acuity incidents.

### *The Path Ahead for the SOC*

If the City wants to provide the three outcomes below, the City will have to increase its deployment of fire crews, to include restoring browned-out companies, adding at least 4 to 6 key missing fire stations, and continuing to use some squads as peak hour reliever units in the busiest areas:

- ◆ Provide equitable response times to all similar risk neighborhoods
- ◆ Provide for depth of response when multiple incidents occur
- ◆ Provide for a concentration of response forces in the core for high-risk venues.

If the City chooses not to adopt these three policy goals for fire services delivery, then it should modify the existing 4-minute travel time goal in the General Plan to provide less than an urban level of fire service.

**Package  
Two**

**Evaluation of Technological Improvements as it  
Relates to Fire Department Response Time  
Performance**

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**1.4 PACKAGE TWO SUMMARY—ASSESSMENT OF TECHNOLOGY AND DISPATCH ISSUES  
(CHAPTER THREE)**

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Some of the scope elements requested in Package Two relating to response times were addressed in the SOC chapter summarized above. Citygate’s Chapter Three logically groups and addresses the remainder of the Package Two scope elements.

There were also some requested scope of work elements related to use of technology and Community Based Organizations (CBO) outreach in the City’s Package Three. They are addressed by Citygate in this chapter so that all the technology issues can be read in one location.

A fire department’s response time performance depends on more than fire station locations, use of appropriate fire apparatus, and crew staffing. It also is critically dependent on the fire dispatch center to, in a timely manner, receive the 9-1-1 call for help, access what is needed, and send the closest, most appropriate units. Afterwards, the dispatch and records technology must have collected all of the appropriate time record information from which to document for public records reasons what occurred, and for departmental management reasons, measure performance and hold employees accountable to departmental standards.

In summary, Citygate finds that the Communications Center does a great job at receiving, processing, and dispatching over 70,000 incidents per year, many in high stress situations. However, as our report will describe, the Communications Center has received its share of budget reductions, including management staff. It is also using legacy technology that does not easily support best practices-based response time and other performance measures. There also is a significant training failure rate for new dispatcher hires and, combined with routine vacancies, the center struggles to maintain a full roster of journey-level dispatchers.

In brief, Citygate has the opinion that, for the Dispatch Center’s operation and management, and for the Department’s overall use of technology to support the SOC delivery of deployment services:

- ◆ The Communications Center lacks Executive Management support with a true understanding of the needs, both operational and technology.
- ◆ The budget for a Battalion Chief’s position was reassigned, and the Division Chief assigned to Communications is overloaded with multiple duties. In Citygate’s review of the Communications Center, we are of the opinion that too

many management and planning decisions are delegated to shift dispatch supervisors.

- ◆ In all aspects of the Fire Department’s response to emergencies, there is a moving timeline. There are too many different managers of the timeline’s segments from call receipt (police) to fire dispatch, crew turnout (Captains and Battalion Chiefs) to travel time (planning, traffic engineering, fire apparatus design) to on-scene operations (command, safety, equipment, training, standard operating procedures).
- ◆ While there is one chain-of-command, in San José the Fire Department has struggled over many years to keep an integrated focus on all issues that affect Fire Department response times.
- ◆ As Chapter Four of Volume 2 describes, there has been extensive turnover in the last 15 years at the executive management level in the Fire Department. This turnover has not helped the agency keep an integrated focus on response time and other operating performance measure systems, much less actual reporting.
- ◆ The Fire Department needs to learn from the technology companies that it serves in Silicon Valley regarding how to have an integrated top-to-bottom focus on process improvement, business metrics to drive executive management decisions, and accountability for results.
- ◆ The Fire Department does not operate anything close to a business information system for the tracking and reporting of data critical to managing its daily operations. The current manual process relying on MS-Excel and multiple legacy data systems is cumbersome, prone to error, and not adequate for the size of the agency.

Citygate’s summarized recommendations to address the issues listed above are:

- ◆ As a first step, Citygate recommends that the Department add an Executive Manager position whose sole task is to order process improvement changes for all aspects of the Department’s operations where they *materially* affect response times.
- ◆ Where process recommendations for time and other operational needs conflict, the Fire Chief should be the sole and final decision maker for time-based policies. The Fire Chief’s decisions should be based on data, and the Chief should be held accountable by the City Manager’s Office to explain response time performance issues on a regular basis.

- ◆ The Department needs to design, bid, and procure a robust, multi-versatile business information system to tie together its disparate legacy data systems. The replacement system must provide best practices analytics and timely, understandable reporting to executive and line management to monitor performance and ensure accountability. Such an investment could cost in the range of \$150,000-\$200,000 dollars initially.
- ◆ The Department has to continue to invest in adequate Information Technology staff to maintain its Information Technology systems, gather data, and provide useful management reports.
- ◆ The Department needs an overall Information Technology Plan, and standing steering committee, to advise on the priorities, staff, and technology procurements necessary, along with monitoring departmental performance reporting.

### *Technology and Dispatch Findings*

- Finding #3-1:** While the Fire Department does measure and report response time processing for medical calls, it does not routinely measure and report overall response time processing.
- Finding #3-2:** Performance times for the Police Department portion of 9-1-1 call handling are not routinely reported or shared with the Fire Department. It is unknown if the performance reports are monitored internally by the Police Department.
- Finding #3-3:** The Fire Department could benefit from participating in a regionalized fire/EMS communications center. The possible benefits include direct program leadership and support, increased communications resource depth, surge capacity within the center during high volume experiences, improved hiring/retention experience, fire/EMS function-designed CAD, shared costs with investments in capital projects, improved morale for employees, and improvements in the response time continuum.
- Finding #3-4:** The deployment of technology both in the Communications Center and in the field is in line with current best practices found in the region. There does not appear to be an assigned responsibility to any one individual or bureau to guide the Department and prepare it for future technological changes.
- Finding #3-5:** The technology used for fire station alerting is slow and outdated. It should be replaced and doing so could save up to 30 seconds per dispatch transaction.
- Finding #3-6:** The Communications Center personnel state they have a lack of support from executive managers who truly understand the Center's function and needs.

While current oversight by the Division Chief is meaningful and very well intentioned, that position has collateral responsibilities that limit the time and attention that can be afforded to the Communications Center.

- Finding #3-7:** The Department does not have an effective system for handling calls for “City Service” requests on the administrative lines, and lacks a method to extract meaningful information from the system. Responsibility to handle these calls at times is distracting to the mission of the Communications Center, and places the City at risk if these calls are not handled in proper and expedient fashion.
- Finding #3-8:** The amount of training time necessary for a new Public Safety Dispatcher to perform without supervision is considerable. With a demonstrated high failure rate for trainees before they are deemed able to perform, new hire failure rates decay Center performance, and eventually the budget, as vacancies persist.
- Finding #3-9:** The Department is not adequately staffed to provide executive management improvement process oversight and technology support.
- Finding #3-10:** The Fire Department does not have an adequate Information Technology Plan. There are Information Technology initiatives underway, but not within an approved plan.
- Finding #3-11:** The Fire Department does not have anything close to a Business Information system for the tracking and reporting of data critical to managing its daily operations. What is being done manually via Excel is cumbersome, prone to error, and not adequate for the size of the agency.
- Finding #3-12:** The Fire Department currently does not monitor the status of deployed alternative or assisting resources such as Citizens Emergency Response Team (CERT), American Red Cross (ARC), or other Non-Governmental Organizations (NGO).
- Finding #3-13:** A Departmental integrated information distribution policy does not exist for communicating with Community-Based Organizations and the news media, including use of the appropriate technology.

### *Technology and Dispatch Recommendations*

- Recommendation #3-1:** Establish a “Communications Center Continuous Process Improvement” internal steering committee, comprised of Fire and Police Department stakeholders with key interests in improving each element of the Communications Center and operation (e.g.,

supervisors at every level, Information Technology representatives, dispatchers, Chief Officers of both departments affected). Task the committee with determining the information currently gathered, the information needed but unavailable, and future planned projects impacting the Center. Construct a model Information Needs document to guide future projects such as CAD and telephone upgrades and replacements, making these an integral part of the design.

**Recommendation #3-2:** Restore direct fire management-level supervision to the Communications Center. The Department should review whether it is best served by reducing the number of responsibilities currently assigned to the Division Chief currently managing this function, or restore the Battalion Chief position formerly assigned to this function, or explore the hiring of a non-sworn civilian position to fill the role of Communications Manager.

**Recommendation #3-3:** Task the Chief Officer who has oversight of the Communications Center to meet regularly with peers in the Police Department to establish dialog. These meetings should include shared performance reports of CAD, 9-1-1 system, and response times. An important item to be discussed regularly is a log mechanism which tracks the progress of issues needing resolution. Results of each meeting should be shared regularly with the chiefs of each department.

**Recommendation #3-4:** Assign the responsibility for developing guidance, research, and recommendations on future technologies to the “Communications Center Continuous Process Improvement” committee. Clearly delineate the responsibilities assigned along with reporting requirements. The Fire Department should inquire among other City agencies (Police Department and Information Technology) how this subject is handled, and create this assignment to be compatible with those found. There may be other fire agencies in the region that have either faced this problem or successfully resolved it.

**Recommendation #3-5:** Assign to the “Communications Center Continuous Process Improvement” committee as appropriate, these tasks:

**3-5.1** Assess whether the current Fire Department Communications Performance Goals can be modified to reflect those found in the NFPA 1221 (Standard for the



Installation, Maintenance, and use of Emergency Services Communications Systems).

**3-5.2** Identify the appropriate timeline for measuring and reporting each performance element of the Call Handling process.

**3-5.3** Identify the shortcomings currently found in obtaining both adequate and timely information from the Police Department as it relates to both incident inquiry (the Police Department side of call process) and shared system issue resolution.

**Recommendation #3-6:** Senior Fire Officers representing both the Bureau of Field Operations and the Bureau of Administrative Services should review the output from the “Communications Center Continuous Process Improvement” committee and seek cooperation from peers within the Fire and Police Departments to resolve outstanding issues.

**Recommendation #3-7:** Participate actively in the Santa Clara County Combined Fire/EMS Communications Center Feasibility Study. Provide status and results to the “Communications Center Continuous Process Improvement” committee.

**Recommendation #3-8:** As the Fire Department participates in the next CAD and 9-1-1 system upgrades, to extract meaningful data and reports, ensure the software is capable of supplying the following:

**3-8.1** All reporting based on GIS data, available at a base level in CAD, with all CAD response or assignments based upon this data, with minimal reliance on third-party interpretive software.

**3-8.2** CAD and phone systems (9-1-1 *and* 10-digit, as well as the administrative telephone system) capable of providing performance reports showing all segments of transactions, configurable by the agency analyst.

**3-8.3** The 9-1-1 system is funded for replacement in 2016. The system should be required to comply with NextGen 911 standards as identified by the National Emergency Number Association (NENA) and Association of Public-Safety Communications Officials (APCO). Both the Fire and



Police Departments should begin preparations now to accept both Text-to-911 and Video-to-911 from the public as it becomes available to ensure that the public is provided access to services.

**Recommendation #3-9:** While the Fire Department enjoys the deployment of a CAD-to-CAD data link with certain other fire/EMS dispatch centers, it appears to be a single-feature solution. That is, it allows one-way notification of a request for resources or an incident notification. There is no acknowledgement feature or confirmation of assignment. This is handled by a telephone call between centers. The completion of this task is then generally noted in the incident comments. The Fire Department should:

**3-9.1** Research methods of enhancing this data link, including two-way features such as real-time resource location and status, automatic time stamp for acknowledgements, etc.

**3-9.2** Research how these improvements could be shared among all fire/EMS agencies that cooperate within Santa Clara County for efficiency and cost sharing.

**3-9.3** Research the use of grant monies to fund the upgrades.

**Recommendation #3-10:** Replace the fire station crew dispatch alert technology (the estimated cost is \$1,275,000).

**Recommendation #3-11:** Review appropriateness of performance standards for all dispatch functions.

**Recommendation #3-12:** Ensure that all “systems” deployed (CAD, 9-1-1, telephone systems) are capable of providing measured performance and exportable data.

**Recommendation #3-13:** Research, procure, and operate analytical software to monitor segmented dispatch and field crew response time performance points, monitor for trends, and provide notifications to line and management personnel when trigger points are met.

**Recommendation #3-14:** Design a notifications plan that provides notifications to supervisors when trigger points are reached (lengthy dispatch time, late turnout time, etc.) for follow-up. Ensure that this notification plan includes an escalation element as times degrade.

- Recommendation #3-15:** Deploy “dashboards” to supervisors to easily monitor performance of those assigned. This would allow, for example, a Senior Dispatcher to monitor call process performance for positions on the dispatch floor, in an easily-read graphic presentation. Once a trigger is reached, a visual warning is sent to the Senior Dispatcher who could immediately check on the status, monitor the phone call, or mark the call for further study. For resources in the field, an on-duty Battalion Chief could have the dashboard available (with notification features via e-mail, text messaging, or both) to monitor all segments of the response time components.
- Recommendation #3-16:** The Fire Department should begin tracking trends experienced in personnel hiring, training, performance, retention, and recruiting. Develop a quality goal for “Recruiting and Retention” and place the responsibility for this goal with the appropriate current position. Utilize an established, tested, and accepted program, then report out the results of this program at least twice each year.
- Recommendation #3-17:** The Fire Department should add an executive manager, whose sole task is to order process improvement changes for all aspects of the Department’s operations where they *materially* affect response times. This position will manage the recommended process improvement committee and the needed technology and staffing for process improvement measurement and reporting.
- Recommendation #3-18:** The “Technology Workgroup” should identify the actual projects that need Information Technology programs and equipment, and develop the Information Technology Plan (ITP). The ITP should include project name, project description, origination data (e.g., response time issues, CAD map errors, etc.); project status; project lead; project assignments (individuals and their tasks); date project assigned; expected due date; due date change history (when and why the project timeline changed); and reporting points (e.g., monthly, significant mileposts, etc.). The Fire Department may also desire to list under which bureau(s) the project is attached, and any elements that are critical to project success (e.g., grant funding performance criteria, serial budget elements, etc.).

**Recommendation #3-19:** The Department needs to design, bid, and procure a robust, multi versatile Business Information system to tie together its disparate legacy data systems. The replacement system must provide best practices analytics and timely, understandable, reporting to executive and line management to monitor performance and ensure accountability. Such an investment could cost in the range of \$150,000-\$200,000 dollars initially.

**Recommendation #3-20:** The Department has to continue to invest in adequate Information Technology staff to maintain its Information Technology systems, gather data, and provide useful management reports.

**Recommendation #3-21:** Establish contact with the leadership of Citizens Emergency Response Team (CERT), American Red Cross (ARC), and Non-Governmental Organizations (NGO) that are in place to assist the public after the Fire Department completes its assignment on an incident. Determine how best the Fire Department can assist these organizations in supplying information to them before, during, and after a deployment.

**Recommendation #3-22:** Re-appoint or add a management-level position of Public Information Officer and office to coordinate the messaging and use of technology for all community outreach communications, whether for preparedness, emergency operations, or disaster plan events.

**Recommendation #3-23:** Explore the establishment of programs that encourage participation from the public in order to achieve the goal of increasing public access. A program such as a “Virtual Operations Support Team” (VOST) utilizes trained volunteers (Citizens Emergency Response Team (CERT), FireCorps, Retired Volunteers, etc.) to work alongside the Fire Department Public Information Officer.

**Recommendation #3-24:** As part of the Department’s Information Technology Plan and Business Information technology solution, implement tools to provide online access to public information, as well as to alert members of the public and Community-Based Organizations during emergency operations. Web outreach, Twitter, and cell phone text messages are all examples of this.

Communications to the public not only provide information in real time, but also enhance the ability of Incident Command to access

data rapidly at an incident scene without utilizing or diverting already-taxed personnel. The San José region is the hub of this type of technology, and residents and businesses have come to expect this level of interaction.

**Package  
Three****Evaluation of Potential Efficiencies in Fire  
Department Operations****1.5 PACKAGE THREE SUMMARY—ORGANIZATIONAL STRUCTURE REVIEW – FIELD OPERATIONS (CHAPTER FOUR)**

In Package Three, Citygate conducted an Organizational Structure Review to identify potential operational efficiencies in the Bureau of Field Operations (BFO). There are four components to this analysis based on staff's recommendations and Citygate's observations of the Department: (1) a review of the Emergency Medical Services (EMS) Continuous Quality Improvement (CQI) and medical education programs; (2) an organizational structure analysis; (3) the results of an on-line organizational survey (of all sworn officers at the rank of Captain through Fire Chief); and (4) an analysis of workforce demographics from 2005 through 2015. The purpose of the organizational analysis was to identify opportunities for improved communications and better organizational alignment and alleviate staffing deficiencies.

**EMS Analysis**

EMS is a substantial part of the San José Fire Department's operations; 59% of all calls, out of approximately 85,000 per year, are EMS related. While EMS takes advantage of the deployment system of the fire service and many of the skills firefighters possess, correct procedures in the medical field are different from the procedures in firefighting and require an additional set of skills. These skills are developed and honed through proper medical education and practical follow-up. These skills also require bi-annual re-licensure and are under heavy regulatory requirements by Santa Clara County and State of California EMS agencies.

Citygate's analysis of the EMS program focused on skill development and maintenance. Skill development occurs in the education program, which is an ongoing process as medical procedures change and develop over time. Skill maintenance occurs in the CQI program where incident reports are reviewed and procedural errors are identified and corrected.

Citygate's chief recommendations for the EMS program are:

- ◆ **CQI Staffing Needs** – Conduct an analysis of CQI staff resulting in potential added position(s), in this order of priority:
  1. One (1) Full-Time Equivalent (FTE) Data Analyst or Epidemiologist
  2. One (1) FTE EMS Division Administrative Staff
  3. One (1) FTE Nurse CQI and Educator

- ◆ **Peer Review Group** – Consider reinstatement of the Peer Review Group; this is a must for an effective CQI program.
- ◆ **EMS Division Chief** – Conduct a review of the EMS Division Chief position to determine why the turnover is so high.

### ***Bureau of Field Operations Organizational Structure Review***

Citygate was also asked to review, analyze, and make recommendations concerning the organizational structure of the San José Fire Department Bureau of Field Operations (BFO). This review considered the basic parameters of correct organizational structures including span of control, unity of command, chain of command, specialization, grouping, supervision, authority, responsibility, and accountability. Citygate’s findings support the recent changes in the structure adding support staff positions into the organization.

Citygate’s chief observations and recommendations for the organizational structure are:

- ◆ **Initial Organizational Changes** – The organizational changes identified in the organization chart at the end of Section 13 in Volume 2 are a solid first step in providing staff positions to perform staff work. This supports one of the key findings of the survey concerning staff workload.
- ◆ **Review for Effectiveness** – Implementing our organizational change recommendations is a good start, but our suspicion is that the BFO management and support workload functions for each of the three field divisions is still significant and additional help could be needed to fully stabilize the staff needs of the Department, particularly in EMS and training. Over the next few years, the Department needs to observe and review its effectiveness to properly train and supervise the personnel in the field.

### ***Organizational Survey and Workforce Demographics***

After we analyzed the survey and workforce demographics data, it became apparent that other factors besides organizational structure and staffing needed attention. *These matters are one focus of this report.*

To evaluate the organizational structure and its impact on performance Citygate developed a survey. The survey questions were designed to elicit responses from the employees in the survey pool that would provide insight into the organization’s strengths and weaknesses. While the survey was available to all company officers and chief officers, less than half took advantage of the opportunity to provide feedback on their organization. Nevertheless, indications from the survey are that the organizational structure is adequate, as it currently exists. The issues appear to be more with “engagement” or commitment to the Fire Department, a dysfunction between followership and leadership.

To evaluate the demographics of the Fire Department, employment data was obtained from the City's Human Resources Department from 2005 to 2015. We specifically assessed employment figures for 2005, 2010, and 2015. The figures were tabulated and analyzed to categorize data and identify trends. Two specific data points are worthy of mention. First, from 2005 through 2015, 538 employees separated from the Fire Department out of approximately 775 employees; that is almost 70% turnover in 11 years. Second, many senior employees retired early, leaving approximately 2,173 years of service behind if a thirty-year career is considered the norm. Both of these are abnormally high and unexpected numbers that have been impacted by a decade of unprecedented structural budget deficits and a large number of eligible employee retirements.

Citygate made 61 “observations” about the implications of the survey and demographic data affecting the Fire Department. Some of these observations also warranted related “findings,” which led to the development of nine recommendations for management to consider. The Department may have already identified and began implementing some of these recommendations. In these cases, our recommendations will reinforce their validity. Other recommendations may have been previously considered but not implemented. In these cases, we suggest the Department reconsider. Finally, some recommendations may be new, and deserve serious consideration.

Three of the most significant recommendations for the Department are listed below:

- ◆ **Operations Policy, Proper Procedures, and Performance Expectation** – Conduct a review of policy, procedures, and performance expectations; ensure they are current and that current training is provided; consider training on policy, procedure, and performance expectations for Captains and Battalion Chiefs.
- ◆ **Leadership Training at the Captain and Battalion Chief Level** – Develop leadership training programs for company officers and chief officers. Ensure training is provided on the essential administrative functions that support *operational readiness*. Refer to the wildland fire service for an example; it offers a complete set of leadership courses and the leadership principles covered are universal.
- ◆ **Performance Evaluation** – Require regular annual comprehensive job performance evaluations for every fire officer. Communicate often about performance. Constant performance feedback is essential. The annual performance report should be a summary of the performance appraisals conducted throughout the year.

### *Organizational Review Findings*

#### **Emergency Medical Services**

**Finding #4-1:** CQI Program documentation is not current. Much of the current CQI/Education efforts are not reflected in the written CQI Plan dated 2000. There is no time for current CQI staff to update the Plan. The Department must recognize that a robust CQI program is essential for the EMS program.

**Finding #4-2:** CQI staff and programs have been cut over the last several years, leaving the program at a “bare bones” level. This is similar to what is seen in other Departments around the State. The cuts included:

- a. Peer Group elimination (2008-2009)
- b. One (1) FTE for Licensing/Certification Credentialing Oversight
- c. EMS Division Administrative Support Staff

**Finding #4-3:** With staff reductions, most of the CQI efforts are retroactive instead of proactive. The workload requirements put the CQI Coordinator into an administrative and teaching position with some time for CQI active item review when necessary.

**Finding #4-4:** Field staff sees the CQI program as “punitive” as they do not hear about positive patient care accomplishments.

**Finding #4-5:** There have been three EMS Battalion Chiefs in the last two years, despite each making a 2-year commitment (individuals are “drafted” if there are no volunteers).

**Finding #4-6:** Mandatory committee participation for the CQI Coordinator uses up to 40% of the position’s time. This required committee participation detracts from potential for a more proactive CQI approach.

#### **Bureau of Field Operations Organizational Structure**

**Finding #4-7:** The Bureau of Field Operations organization design, with the restoration of the Safety and Communications Manager positions, will be adequate for the present time, but we suspect that the identified staff functions for each of the field divisions is still significant and additional help could be needed to fully stabilize the support needs of the fire station personnel. Over the next several years, the Department needs to observe and review the need for staff positions and the incumbents’ capabilities to be current with the assigned workload.



### Organizational Survey and Workforce Demographics

- Finding #4-8:** The number of special assignments in the Department has significantly increased, likely beyond what the Department personnel can complete on a part-time basis from shift positions. The Department needs to start triaging special projects and only take on those that are critical operationally until adequate numbers of staff personnel are assigned.
- Finding #4-9:** The number of reports officers are required to prepare has significantly increased and emphasis has to be placed on implementing and training Fire Captains and above on software systems that are efficient that help them perform their jobs, not hinder them.
- Finding #4-10:** Many Fire Department officers do not perceive that information technology changes are positively impacting their job. Utilization of dashboards providing useful data to supervise personnel to expectations should be pursued.
- Finding #4-11:** Many officers are unclear on either their own roles or possibly the roles of their superiors, and in some cases, subordinates. As such, the education on these issues is likely inadequate.
- Finding #4-12:** Many Fire Department officers believe that the Department is inconsistent in its application of administrative, operational, and personnel policies. While this may be caused or worsened by the turnover in supervisor positions, it can be overcome with training and focus.
- Finding #4-13:** Many Fire Department officers reported a significant decrease in face-to-face and telephone communication. These forms of communication are important to ensure comprehension of feedback and should be emphasized.
- Finding #4-14:** Many Fire Department officers receive no or limited feedback on their performance. A lack of performance feedback can cause insecurity and poor performance to standards for newly-promoted employees.
- Finding #4-15:** Fire Department officers do not perceive that their supervisors create a compelling vision of the future. A compelling vision *instilled in all personnel* is critical to the Department's success.
- Finding #4-16:** Many Fire Department officers reported that they do not receive sufficient leadership training. This has a significant impact on operational readiness and it is apparent from the trends in the organizational survey indicating that

leadership training and preparation needs to be ramped up considerably to prepare the officers to be successful in their roles.

**Finding #4-17:** Over half of the officers that completed the organizational survey do not perceive they can count on the Fire Department for support when they feel over-stressed or burnt-out from performing duties. This has to be addressed through education and “walking the talk” with managers supporting their subordinates.

### *Organizational Review Recommendations*

#### **Emergency Medical Services**

**Recommendation #4-1:** Change the paradigm to acknowledge, and make decisions based on, the importance of a robust, proactive CQI process.

**Recommendation #4-2:** Conduct an analysis of CQI staff resulting in potential added position(s) in this order of priority:

- a. One (1) FTE Data Analyst or Epidemiologist Nurse
- b. One (1) FTE EMS Division Admin Staff
- c. One (1) FTE Nurse Educator

**Recommendation #4-3:** Develop an internal marketing program to change perception of the CQI program from negative to a positive.

**Recommendation #4-4:** Consider reinstating the Peer Group: this is required for an effective, positive CQI program.

**Recommendation #4-5:** Conduct a committee participation review. The Department should ask:

- a. Should there be participation from other field or supervisory staff?
- b. How should committees be identified that could be dropped (discuss this with the County LEMSA)?

**Recommendation #4-6:** Commit time/staff to update the CQI Plan:

- 4-6.1** Separate a CQI Plan from EMS/CQI Policies & Procedures.
- 4-6.2** Add components of the CQI process not currently documented in the Plan.

- 4-6.3** Update all policies and procedures, date the updates, and distribute the updates to all field personnel.

**Bureau of Field Operations Organizational Structure**

**Recommendation #4-7:** In FY 15/16, consider reassigning Safety and Communication Battalion Chief positions to the Bureau of Field Operations.

**Organizational Survey and Workforce Demographics**

**Recommendation #4-8:** **The Leader’s Vision:** Throughout our study we have been troubled by “something missing” from the organization. Observation #18a needs to be considered very thoughtfully. The leadership needs to decide on the compelling vision and then state it, repeat it, and live it every day until it becomes the mantra of the organization.

**Recommendation #4-9:** **Staff Work:**

- 4-9.1** Perform a thorough survey of current and pending staff assignments and special projects. Categorize them as follows: “essential to operational readiness” and “everything else.” Assignments or projects in the “everything else” category need to be prioritized and any that utilize line personnel for their completion need to be prioritized and completed with staff personnel.
- 4-9.2** Utilize operational readiness as the criteria for all future special projects and assignments that require the participation of line personnel for their completion.
- 4-9.3** Role clarification needs to be a topic of discussion by Department leadership primarily for Battalion Chiefs and Captains. The critical time for it to occur for the employee is upon promotion. Policy should broadly state the parameters of the roles of the different levels of the organization; then this policy needs to be taught and reinforced.

**Recommendation #4-10:** **Operational Policy, Proper Procedures, and Performance Expectations:** Review the current training program’s focus on operational policy, proper procedures, and performance expectations. Verify the instructional deliveries are consistent with policy. Consider developing training that focuses on current operational

policy, proper procedures, and performance expectations for the classes that have not received this training in over three years. Particular focus should be on Battalion Chiefs and Fire Captains, because of their limited years of service in those ranks.

**Recommendation #4-11: Dashboards:** Provide fire officers, especially Battalion Chiefs, with dashboards tied to the Department’s records management system (RMS) so that they can quickly access data and information necessary to administer their respective sections and battalions and spend more time focused on constituency management, effective communication, and personnel leadership.

**Recommendation #4-12: Report Requirements:** Perform a comprehensive review of all the reports required of fire officers. Consider eliminating all reports except those required by law or necessary for operational readiness.

**Recommendation #4-13: Leadership Training:** Develop leadership training programs for company officers and chief officers. The federal wildland fire agencies have developed a complete series of leadership courses for the wildland fire service. Many municipal departments have utilized these courses and found them to be appropriate and valuable. Leadership principles are universal and the takeaways apply to any fire agency. Relevant information can be found online at <http://www.fireleadership.gov/courses/courses.html>.

**Recommendation #4-14: Verbal Communications:**

**4-14.1** Chief Officers need to set the example by utilizing verbal communications instead of email, texting, and other electronic means as much as possible. Occasional visits by the Fire Chief and senior staff to fire stations for informal discussion over a cup of coffee will do wonders for this department. The Fire Chief should make it a practice to visit at least one station, informally, once a week. Other senior staff should do the same.

**4-14.2** Battalion Chiefs, as first-line managers, need to spend more time verbally communicating with their assigned personnel. They should make phone calls instead of sending emails or text messages when possible to ensure that the feedback loop is open and operating.

**Recommendation #4-15: Performance Evaluations:** Effective career development depends on consistent training and mentoring, but more importantly, it depends on regular formal and informal job performance feedback. Regular annual comprehensive job performance evaluations should be a job requirement for every fire officer. However, the annual performance report should be a summary of the performance appraisals conducted throughout the year. The performance appraisal should not only be a review of the past, it should also include a plan for the future that the Department commits to fulfilling.

**Recommendation #4-16: City/Department Commitment to Employees:** The City and the Department leadership need to have serious adult conversations about the type of commitment the City is willing to make to the fire officers. When over half the respondents to the survey report that they cannot rely on the Fire Department to “have their backs” in a time of need (see survey question #21), that is a serious problem.

## **1.6 FISCAL IMPACTS OF RECOMMENDATIONS**

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All three of the City’s requested packages resulted in Citygate making recommendations for improvement as resources allow. The City asked for recommendations and costs to be presented in different scenarios at the end of Package One starting with an analysis of what to do if there are not increased revenues available. Some of Citygate’s recommendations require funding for additional fire crew personnel, fire apparatus, and capital facilities. Such recommendations will take several fiscal years to be implemented and some will have to compete for funding with other Fire Department and Citywide needs. Siting, design, and construction of fire stations will take several years. The City budget process will have to spread any agreed-to fire service changes over several years.

Citygate below sets forth the cost strategy tiers (budget scenarios) as requested by the City. Each budget scenario is shaded grey.

**Improve services given current budgetary resources, staffing configurations and performance goals.**

The Fire Department is already conducting the following objective improvements as reported to the City Council Public Safety, Finance, and Strategic Support Committee (PSFSS) Committee on September 10, 2015:

**Table 6—Fire Department Improvements in Progress**

Project	Status	Next Steps	Timeline / Completion
1. Analyze/Validate Response Time Data	Complete		
2. Data Collection	In Process	Ongoing	Ongoing
3. Business Intelligence Tool	In Process	Vendor Demonstration	Jun-2016
4. Establish Data Warehouse	In Process	Analysis: City IT vs Cloud Solution	Jun-2016
5. Enable GPS Unit Tracking	In Process	Partially implemented	Oct-2016
6. Implement Early Dispatch	Complete		
7. 911 Phone System Upgrade	In Planning	Evaluating Systems	Feb-2016
8. Fire Communications Staffing	Ongoing	New recruitment and promotional process underway	Staffing stabilized May 2017
9. Response Area Mapping	Ongoing		Nov-2016
10. Base Map Update	Ongoing		
11. EMS Quality Assurance Update	In Process		July-2016
12. Organizational Review	In Process	Consultant to Analyze/Report Data	Feb-2016
13. Turnout Time Pilot	In Process	Analyze/Report Data	July of 2016 (Final Report)
14. CAD to CAD Dispatch Link	In Process – SVRIA/Regional Comm. Related	Phase II: New Server/Software	In Process – SVRIA/Regional Comm. Related
15. Border Drops	In Process – SVRIA/Regional Comm. Related	Phase II: New Server/Software	In Process – SVRIA/Regional Comm. Related
16. Signal Preemption	Requires Funding	Budget Implications	TBD
17. Move-ups	Evaluating		
18. Closest Unit Dispatch	Technology in place	Awaiting Service Pak 11: Policy/Algorithm Development	Jul-2017

Project	Status	Next Steps	Timeline / Completion
19. Navigation Technology	In Planning		Nov-2016
20. Emergency Response Zones Refinement	Ongoing		
21. Unit Availability	Ongoing	Decentralized Training	
22. Deployment Refinements	Analyze Data	Org Review	Feb-2016
23. Implement Omega Protocol	Requires County EMS Cooperation	County Contract Implications	Undetermined
24. Determine Impact on SJFD Response Performance	Complete	Develop Report	

Many of Citygate’s deployment and organizational staffing recommendations contained in this study require additional personnel and technology resources; however, some progress can be achieved *within the current* budget through work already underway on the 24 items listed above. To that end, and given the potential to improve response time performance within the current budget, Citygate recommends prioritizing the above Work Plan as follows:

1. Base map update
2. Emergency Response Zone refinement
3. Data collection
4. Business intelligence tool software for measuring and managing operations
5. Establish data warehouse
6. Response area mapping
7. Navigation technology
8. Fire communications staffing
9. Turnout time PILOT improvement project
10. Enable GPS unit tracking
11. Border drops with bordering partner fire departments
12. Move-ups from less busy to busy areas
13. Deployment refinements such as quantity of units to less severe incidents

**Overall Finding:** In this budget scenario, other than a small improvement in dispatch and crew turnout time using better tracking and refinement measures, it will not be possible for the Department to significantly improve its response time performance to City goals for all neighborhoods that lack fire stations or other recommended best practices as described in this study.

**Overall Recommendation:** Without additional line or headquarters staffing, most of the needed improvements to the Department’s organization cannot be addressed.

**Provide recommendations to improve services delivered by the Fire Department, if current budgetary resources were increased 3% - 5%, given current staffing configurations and current performance goals.**

The Department’s current operating budget is \$185 million dollars. Three percent (3%) of the current Fire Department budget is \$5,550,000, and 5% of the current Fire Department budget is \$9,300,000.

In this scenario, *without* adding personnel, the technology items in the Department’s table above could be well met at the 3% point. The fire station alerting system replacement alone will cost approximately \$1,275,000. Adding traffic signal preemption would require more than another 2% up to the 5% point, but substantial progress would be made per year if \$3,700,000 were committed to this item.

**Overall Finding:** This budget scenario, using only technology enhancements, will provide a modest crew dispatching time and data tracking improvement, along with increased traffic safety at intersections. But those improvements will still be too small for the Department to *substantially* improve its response time performance consistent with City goals or other recommended best practices as described in this study. This is especially true of the EMS incident volume as it continues to grow.

**Overall Recommendation:** Absent increasing line or headquarters staffing, the City should, at a minimum, strive to make the technology improvements identified in this report.

**Provide recommendations to improve services delivered by the Fire Department, given current budgetary resources (no other constraints).**

For the reasons contained in this study, the deployment gaps and simultaneous incident demands are so high, and the headquarters issues identified so understaffed, that just a dramatic “re-shuffling” of existing field personnel will not solve the City’s response time problems. As this report identified, even if all of the current 29 engines were reduced to three personnel per day,



the net gain of added three-person crews is nine engines. While in theory this would close the nine significant geographic response time gaps, the physical facilities for the added units, even if temporary, would still cost substantially more than this scenario envisions. In addition, the capital costs for the added engines and equipment must be considered.

As discussed in this summary and the adjoining Technical Report Volume 2, a Citywide three-firefighter staffing scenario reduces the ability of the first crew to commence interior building fire attack under Occupational Health and Safety Regulations (OSHA) known as the 2-in/2-out rule. There are other operational issues to three-firefighter engines such as requiring more engines to an incident to fully staff the operational need.

**Overall Finding:** This budget scenario does not work as resetting all staffing to three per crew still costs more than the current budget. More units without a reduction in EMS responses still means that deployment gaps exist at peak hours of the day, and an effective fire attack cannot occur when only three personnel first arrive without a timely second-due unit. Even if the capital needs could be funded, this scenario trades improvements in response time for a bet that serious fires will not occur when only a three-person crew arrives without timely second-due unit support. Thus, the ability of the Department to limit the spread of severe fires is compromised and is especially true for wildland fires that quickly need more personnel, in historic dry conditions.

**Overall Recommendation:** Given the practical difficulties and increased costs for a redeployment of line personnel, limited progress can be made to dramatically improve response times *within current funding*, other than implementing the prioritized and funded projects listed above.

**Provide recommendations to improve services delivered by the Fire Department, if current budgetary resources were increased 3% - 5% (no other constraints).**

This study has identified deployment shortfalls in the Fire Department. If additional funding were to be available, the City could see the elimination of brownouts of up to two companies, improved equity of response times to similar risk neighborhoods, and increased quality assurance in EMS and technology sections.

**Overall Finding:** Improving services will require more deployed companies. As indicated above, three percent (3%) of the current Fire Department budget is \$5,550,000, and 5% of the current Fire Department budget is \$9,300,000.

**Overall Recommendation:** If a 5% ongoing increase can be provided to the Fire Department, Citygate recommends the City add back the two closed fire companies (\$5.2 million), restore

minimum staffing overtime (\$4 million), and one needed headquarters position in EMS (\$117,000), totaling \$9,317,000, or 5% of the current budget.

Additionally, Citygate would recommend the use of one-time funding for improving Traffic Signal Preemption and Fire Station Alerting systems.

### Citygate's Overall Findings and Recommendations (No Constraints)

The deployment analysis identified up to nine areas that lacked neighborhood fire station coverage at a recommended travel time distance of 4 minutes. If the City were to choose to accomplish all four items listed below, the aggregate costs in current dollars are shown in Table 7:

- ◆ Maintain a 4-minute travel time policy for fire stations
- ◆ *Restore the two closed companies with the resultant overtime to maintain minimum daily staffing*
- ◆ Provide the funding for *at least* the first five gap areas
- ◆ Provide added staffing for the most important headquarters positions.

**Table 7—Annual Operating Costs**

Item	Unit Cost	Quantity	Total
<b>Restore</b> Closed Fire Companies	\$2,600,000	2	\$5,200,000
Restore Minimum Staffing Overtime	\$4,000,000		\$4,000,000
<i>Additional</i> Gap Area Fire Companies	\$2,600,000	5	\$13,000,000
EMS CQI <sup>1</sup> Nurse	\$117,000	2	\$234,000
Process Improvement Manager	\$175,000	1	\$175,000
EMS Staff Specialist	\$123,000	1	\$123,000
<b>Total</b>			<b>\$22,732,000</b>

<sup>1</sup> Continuous quality improvement

**Overall Finding:** A more modest annual fiscal year growth rate of 3% of the current budget is approximately \$5.5 million dollars. In terms of fire companies, a 3% increase can fund the restoration or addition of two fire companies per year. If nine companies were to be restored and added, it would take four to five fiscal years at current costs.

Separate from restoring and adding fire companies, the cost to add the headquarters staffing positions shown in Table 7 total \$532,000, which is less than 1% of the current operating budget.

**Overall Recommendation:** Increase the Fire Department budget by 12.4%, which totals \$22,732,000. This will add the identified headquarters positions in the table above, the two closed fire companies (after the 2014 SAFER Grant) along with the necessary minimum staffing overtime, and five gap area fire companies. This increase should be the City’s near-term goal.

The capital costs for adding five new fire stations with fire engines (pumpers) and adding a cross-staffed wildland fire unit (as discussed in Recommendation #2-5) are shown in the table below.

**Table 8—Capital Costs**

Item	Unit Cost	Quantity	Total
Fire Engine (Pumper)	\$750,000	5	\$3,750,000
Wildland Type III Pumper	\$400,000	1	\$400,000
Fire Station	\$8,300,000	5	\$41,500,000
Traffic Signal Preemption	Varies	Varies	\$1,600,000 to \$6,000,000
Replace Fire Station Crew Alert Technology	Varies	Varies	\$1,275,000
<b>Estimated Total</b>			<b>\$48,525,000 to \$52,925,000</b>

**Provide recommendations for potential funding sources to support improvements to Fire Department services.**

The possible new revenue sources for any city to increase its General Fund capabilities are well known and regulated under California law and/or the City’s charter. All major additions require voter approval by a two-thirds margin. Examples would be a general or sales tax increase.

While developers can be required to participate under impact fee laws for the provision of physical fire stations and fire apparatus, impact fees cannot cover ongoing staffing costs. It is possible for some of the new fire station staffing costs to be covered by new neighborhood assessment or Mello Roos districts, but under state law, such districts can only pay staffing costs for the *new added* burden caused by the development, not existing staffing deficiencies. Thus, added fire staffing costs would be to be split between new and existing demands. These calculations would have to be done on an area-by-area basis, but some staffing costs could be borne by new assessment districts.

As for technology costs, the City can fund them incrementally from a combination of new development fees and General Fund revenues, or use bond debt to speed up the acquisitions.

**Overall Finding and Recommendation:** The City Council has to first provide the policy direction for a desired level of fire service. If the goals exceed available revenues, staff can then size and recommend the best-fit additional revenue tools for capital and operating personnel expenses.

### **1.7 SUGGESTED NEXT STEPS**

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The purpose of a Standards of Coverage study is to compare the City’s current performance against the local risks to be protected as well as to compare against nationally recognized best practices. This analysis of performance forms the base from which to make recommendations for changes, if any, in fire station locations, equipment types, staffing, and headquarters programs.

As one step, the City Council should adopt updated and best practices based response time goals for the City and provide accountability for the Fire Department personnel to meet those standards. The goals identified in Recommendation #2-1 meet national best practices. Measurement and planning as the City continues to evolve over time will be necessary for the City to meet these goals. Citygate recommends that the City’s next steps be to work through the issues identified in this study including:

- ◆ Absorb the policy recommendations of this fire services study and adopt updated City performance measures to drive the deployment of firefighting and emergency medical resources.
- ◆ Immediately restore the closed fire companies to include the overtime needed to maintain minimum staffing.
- ◆ Immediately add the needed headquarters positions.
- ◆ Immediately develop the costs and a timeline for the addition of a minimum of four to six additional fire stations.
- ◆ As adding additional fire stations will take several years, after the SAFER Grant and the two other closed companies are restored, add five additional fully-staffed fire companies as reliever units to fill gaps during peak hours of the day.
- ◆ Monitor the effect of growth and traffic congestion on incident demand volume at peak hours of the day.
- ◆ If traffic congestion continues to decay response times, even with additional fire crews, then even more peak hour squads will become necessary to maintain response times to single-patient EMS events.